

## **AMENDMENTS TO THE CLAIMS**

**Claim 1 (Currently Amended):** A diagnostic apparatus of a valve timing control system for variably controlling a valve timing by adjusting a rotational phase between a crankshaft and a cam shaft of an engine, comprising:

means for detecting a fluctuation of engine speeds of said engine following a change of the valve timing~~engine operating conditions~~ and for calculating a diagnosis value based on said ~~by~~ integrating the absolute value of the fluctuation of engine speeds of the engine; and

means for comparing said diagnosis value with a threshold value which is set based on the characteristics of the valve timing control system and for judging that a failure occurs in said valve timing control system in case where said diagnosis value exceeds said threshold value.

**Claim 2 (Canceled)**

Claim 3 (Currently Amended): A diagnostic apparatus of a valve timing control system for variably controlling a valve timing by adjusting a rotational phase between a crankshaft and a cam shaft of an engine, comprising:

means for detecting a fluctuation of engine speeds following a change of the valve timing~~engine operating conditions~~ and for calculating an elapsed time until said fluctuation converges to a steady value; and

means for judging that a failure occurs in said valve timing control system in case where said elapsed time exceeds a preestablished time which is based on the characteristics of the valve timing control system.

Claim 4 (New): A diagnostic apparatus of a valve timing control system for variably controlling a valve timing by adjusting a rotational phase between a crankshaft and a cam shaft of an engine, comprising:

a detector set up to detect a fluctuation of engine speeds of said engine following a change of the valve timing and to calculate a diagnosis value by integrating the absolute value of the fluctuation of engine speeds of the engine; and

a comparator set up to compare said diagnosis value with a threshold value which is set based on the characteristics of the valve timing control system and to judge that a failure occurs in said valve timing control system in case where said diagnosis value exceeds said threshold value.

Claim 5 (New): A diagnostic apparatus of a valve timing control system for variably controlling a valve timing by adjusting a rotational phase between a crankshaft and a cam shaft of an engine, comprising:

a detector set up to detect a fluctuation of engine speeds following a change of the valve timing and to calculate an elapsed time until said fluctuation converges to a steady value; and

a judger set up to judge that a failure occurs in said valve timing control system in case where said elapsed time exceeds a preestablished time which is based on the characteristics of the valve timing control system.